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Immunisation

Vaccinating the vulnerable first may be a flawed strategy

Michael Le Page

THE vaccine strategy most nations are following – of vaccinating the most vulnerable first rather than those who are likeliest to spread the coronavirus – may be the best way to save lives in the short term. But it is also the strategy with the greatest risk of driving the evolution of variants that can escape vaccine protection, according to a model developed by Julia Gog at the University of Cambridge.

“What is the absolutely worst strategy? You vaccinate all of the vulnerable and none of the ‘mixers,’” Gog said in an online presentation in February.

Gog isn’t calling for a change in vaccine strategy. But her finding reinforces the importance of keeping case numbers down as vaccines are rolled out. “We’ve got to get prevalence down, otherwise we’re [creating] a real risk of producing an escape variant,” she told *New Scientist*. “What you can’t do is get halfway through vaccination and allow cases to rise. That would be devastating.”

In countries with few or no cases, by contrast, the virus will have far fewer chances to

evolve, so the order of vaccination doesn’t matter as far as variant evolution is concerned.

Gog’s simple model is one of the first to evaluate the effect of vaccine strategies while also considering the risk of variants arising. In it, the entire population is divided into vulnerable people with a higher chance of becoming severely ill and “mixers” who are more likely to spread the virus.

An elderly woman receives a coronavirus vaccine in Pittari, Italy



IVAN ROMANO/GETTY IMAGES

The likelihood of escape variants appearing is assumed to depend on the number of vaccinated people who become infected, because every time this happens there is a small risk of such variants evolving.

Although the model is simple, Gog thinks the general conclusion that vaccinating the vulnerable first maximises so-called vaccine escape pressure is correct. “It’s bonkers to keep buying your worst enemy lottery tickets and then being surprised if they win the lottery,” she said.

But with the more transmissible B.1.1.7 variant causing a growing number of cases globally, the focus should still be on vaccinating the vulnerable, says Alessandro Vespignani at Northeastern University in Boston. “We have to deal with a variant that is ramping up now,” he says. “We have to think about averting deaths in the next couple of months, rather than down the road.”

There are still too many unknowns for models to give us clear answers on the best vaccine strategy, says Vespignani. For instance, even if variants evolve that are more likely to infect vaccinated people, they might cause only mild disease if they do.

Last year, Vespignani and his colleagues compared what would happen if vaccines were distributed fairly around the world based on population numbers rather than hoarded by rich nations until they have vaccinated their entire populations, as the likes of the US and UK plan to do. The researchers found that equitable distribution would roughly halve the number of global deaths. ■

Long covid

Vaccines may help clear up long-term covid-19 symptoms

SOME people with long covid, the term for long-lasting symptoms after a covid-19 infection, have had health improvements after being vaccinated against the coronavirus. Reports are based on anecdotes and an informal survey, but may offer clues to the cause of long covid.

For most people, the symptoms of covid-19 clear up within weeks, but some are still ill many months after the infection. It is unclear what

causes symptoms such as fatigue and trouble concentrating to persist.

People with long covid have expressed fears in support groups that getting the vaccine will worsen symptoms, says Gez Medinger, who began making YouTube videos about long covid after developing it himself. “People are very anxious about it,” he says. Medinger carried out a survey using Facebook groups of 473 people with long covid who had received a first dose of vaccine.

Most felt “moderately unwell” for the first two days after having the jab. After two weeks, about half were back to feeling the same

as they did before the vaccine. Some took a turn for the worse, with 4 per cent saying they had a relapse of symptoms. Another 14 per cent said they felt slightly worse than before the vaccine.

But 32 per cent said they either felt better or were totally recovered.

“Taking the vaccine is more likely to completely resolve your symptoms than make you feel much worse,” says Medinger. Most of the

32%

Proportion of people with long covid who felt better after being vaccinated

respondents were from the UK or US. Sixty per cent had the Pfizer/BioNTech jab, 30 per cent got the Oxford/AstraZeneca one and the rest had the vaccine from Moderna.

“By giving a vaccine, you could enhance the immune response in those who would otherwise continue to have virus lurking in sites within the body and this would lead to its elimination,” says Peter Openshaw at Imperial College London. But he adds that it is too soon to conclude that the vaccine definitely helps people recover and that a formal study is needed. ■

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